XLI. *A Letter to the Right Honourable the Earl of* Macclesfield, *Preſident, the* Council, *and* Fellows, *of the* Royal Society, *concerning the Variation of the Magnetic Needle; with a Sett of Tables annexed, which exhibit the Reſult of upwards of Fifty Thouſand Obſervations, in Six periodic Reviews, from the Year* 1700 *to the Year* 1756, *both incluſive; and are adapted to every Five Degrees of Latitude and Longitude in the more frequented Oceans. By* William Mountaine *and* James Dodſon, *Fellows of the Royal Society.*

Dated London, Nov. 9th. 1757.

SIRS,

Read Nov. 10. 1757.

ON the 20th of March 1755, we preſented an addreſs to this illuſtrious Body, intituled, "An Attempt to point out, "in a conciſe manner, the Advantages which would "accrue from a periodic Review of the Variation of "the Magnetic Needle, throughout the known World; "requeſting contributions thereto, by communicat-"ing ſuch obſervations concerning it, as had then "been lately made, or could be procured from cor-"reſpondents in foreign parts."

This addreſs was read at the ſame time, and afterwards honoured with a place in the Tranſactions, vol. xlviii. part ii. for 1754: which favour we now acknowlege in the moſt grateful manner; and, pur-

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ſuant to our engagements, beg leave to lay before you ſome account of the communications received, with a ſpecimen of the uſes and applications which we have been enabled to make of thoſe, and other aſſiſtances with which we have been indulged.

On application to the Honourable the Commiſſioners of the Navy, we were obliged with an order of free acceſs to all their maſters log-books and journals.

The Directors of the Honourable Eaſt India Company granted the like privilege.

The Honourable Committee of the Hudſon's Bay Company obliged us with ſundry obſervations, made, and tabulated, by their own Captains.

James Bradley, D. D. Regius Profeſſor of Aſtronomy, and F. R. S. favoured us with ſeveral obſervations made at the Royal Obſervatory at Greenwich.

John Hyde, Eſq; F. R. S. communicated a ſett of uſeful obſervations, extracted from two journals kept on board the Triton and Britannia Eaſt Indiamen.

A correct journal kept on board the Delawar Eaſt Indiaman was handed to us by a gentleman unknown.

Capt. George Snow furniſhed a conſiderable number of obſervations, made with care and accuracy by himſelf, in ſeveral ſucceſſive voyages to, and from Barbadoes and Virginia; together with ſeveral remarks upon the ſubject: *One*, which we apprehend to be material, we beg leave to inſert, as it meets with ſome confirmation by the tables annexed; *viz.*
" At Barbadoes the variation ſeems at a ſtand very
" near; for in the road, 1752, I obſerved 5 degrees
" eaſt; and by Mr. Halley's draught, in the year
" 1701, 5 ½ degrees: in 1747, at Port Royal keys,
" Jamaica, I obſerved the variation 7° 20′ E.; and
" on the coaſt of Carthagena the ſame week, off
" the

" the high land of Sancta Martha, 7° 45′ E. nearly
" ſouth of Port Royal: Therefore theſe curves are
" not much altered; and the curve at Jamaica is
" nearly at a ſtand, as tho' tied; and the ſouth part
" of them, with the reſt, dropping to the weſtward."

Mr. Mungo Murray, author of a treatiſe on ſhip-building, preſented us with ſeveral obſervations taken on board the Prince Edward and Cheſterfield Eaſt Indiamen, and his Majeſty's ſhip the Neptune.

For all theſe favours we return our ſincere thanks.

No obſervations made upon land have been received, except Dr. Bradley's aforeſaid; which has fruſtrated our intentions of continuing the curves from ſea to ſea.

By collecting, comparing, and adjuſting, all theſe materials, we have been enabled to conſtruct variation-curves upon Dr. Halley's mercator-chart, adapted to the year 1756; which will ſoon be in readineſs to preſent to this Royal Society.

As a work of this kind requires much time, and a multitude of obſervations, both by ſea and land, to render it more perfect and general; we hope the ingenious in all nations will lend their aſſiſtance: By this means every periodic review will be productive of improvement.

From the firſt inſtant that we made this affair the object of our more particular conſideration, we have attended to the mode of increaſe and decreaſe in the variation: and as a conſiderable number of obſervations, made at periodic times, and duly regiſtred, ſeem to be the moſt eſſential toward determining the laws of its mutation, or proving its irregularity, we have therefore formed a ſett of tables, from actual obſervations collected for the years 1710, 1720, 1730, and 1744, the date of our laſt chart; which, together

with

with Dr. Halley's for the year 1700, and the preſent chart now publiſhing, compleat ſix reviews: Theſe are tabulated, and ſhew the quantity of the variation, at thoſe ſeveral periods, to every 5 degrees of latitude and longitude in the more frequented oceans; which we hope will prove acceptable, as nothing of the like kind has yet appeared, or can eaſily be obtained.

Our materials have been ſo deficient, that even in the limits to which our tables are confined, we have been obliged to leave blanks in ſome of the above periods, for want of that concurrent teſtimony, on which the numbers inſerted are founded: but, conſidering the difficulties unavoidably attending a work of this ſort, and the little aſſiſtance which we have met with from private hands, we hope that this Royal Society will not only excuſe thoſe vacancies, but alſo thoſe in the great tracts of ſea, as well as land, concerning which we are very unwillingly obliged to be intirely ſilent.

Agreeable to our former addreſs, we lay only what appear to be facts before you, without attempting to introduce any hypotheſis for the ſolution of theſe phænomena; ſome of which (being very extraordinary) we recommend peculiarly to the notice of thoſe gentlemen, who may endeavour the inveſtigation of their cauſes.

Under the equator, in longitude 40° E. from London, the higheſt variation during the whole 56 years appears to be 17° $\frac{1}{4}$ W. and the leaſt 16° $\frac{1}{2}$ W.: and in latitude 15° N. longitude 60° W. from London, the variation has been conſtantly 5° E. but in other places the caſe has been widely different; for in the latitude 10° S. longitude 60° E. from London, the variation has decreaſed from 17° W. to 7 $\frac{1}{4}$ W.; and in latitude 10° S. longitude 5° W. from London, it has increaſed from 2°¼ W. to 12°¾ W.; and in latitude 15° N. longitude 20° W. it has increaſed from 1° W. to 9° W.

But there is ſtill a more extraordinary appearance in the Indian ſeas: for inſtance, under the equator.

Longitude from *London*	Variation in 1700.	1756.
Degrees.	Degrees.	Degrees.
40 E	16¾ W	16¾ W
45 E	17¾ W	14½ W
50 E	17½ W	11¾ W
55 E	16½ W	8¾ W
60 E	15¼ W	6 W
65 E	13½ W	4½ W
70 E	11½ W	3¼ W
75 E	9¾ W	1 W
80 E	7¾ W	0¼ E
85 E	5½ W	1¼ E
90 E	4¼ W	1 E
95 E	3¼ W	0½ W
100 E	2½ W	1 W

Where the weſt variation in the longitude 40° E. is the ſame in both the above years; and in 1700 the weſt variation ſeemed to be regularly decreaſing from longitude 50° E. to the longitude 100° E.; but in 1756 we find the weſt variation decreaſing ſo faſt, that we have eaſt variation in the longitude 80°, 85°, and 90° E; and yet, in the longitude 95° and 100° E. we have weſt variation again.

Such are the irregularities, that experience hath ſhewn us, in the variation of the magnetic needle; which appear ſo conſiderable, that we cannot think it wholly under the direction of one general and uniform law; but rather conclude, with the learned and judicious Dr. Gowen Knight, Fellow of this Society, in the 87th prop. of his treatiſe upon attraction and repulſion, That it is influenced by various and different magnetic

magnetic attractions, in all probability occaſioned by the heterogeneous compoſitions in the great magnet, the *Earth.*

Notwithſtanding all which, ſhould the ſagacity of ſome eminent philoſopher be able to exhibit rules, whereby the quantity of the variation may be computed for future times, yet then ſuch a review, as we have now made, will be neceſſary at a proper interval, to prove the truth of them: and ſhould no ſuch rules appear, then will a continued ſucceſſion of ſuch reviews be neceſſary ſo long as commerce and navigation ſubſiſt among us.

What we have now done is intirely for the public ſervice, the ſale of the former chart never having made good its expence; and we propoſe to continue our endeavours for another review, at the proper time, if we ſhall then be alive, and capable of the taſk: but as the contrary may probably happen, we beg leave to conclude with recommending ſuch a continuation, in the ſtrongeſt manner, to ſuch of the members of this Royal Society, or others, who may, at the proper intervals, have leiſure and ability for ſuch a performance.

We are, with the greateſt deference,

Your Lordſhip's,
And the Royal Society's,
Moſt faithful and
moſt obedient Servants,

William Mountaine.
James Dodſon.

A TABLE, *exhibiting the different Variations of the* MAGNETIC-NEEDLE *in the more frequented Oceans, from the Year* 1700 *to the Year* 1756.

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
0	0	4½ W			10¼ W	14¼ W	15¼ W
0	5 W	2¾ W			8¾ W	12 W	13¼ W
0	10 W	1½ W	3½ W	5½ W	7 W	10 W	11 W
0	15 W	0½ W	2 W	3½ W	5 W	7½ W	9 W
0	20 W	0¾ E	0½ W	1¾ W	3 W	5¼ W	6½ W
0	25 W	1½ E	0½ E	0½ W	1½ W	3 W	4 W
0	30 W	2½ E	2 E	1½ E	1 E	0¾ W	0½ W
0	35 W	3¼ E	3 E	2¾ E	2½ E	1½ E	1½ E
0	40 W	4¼ E	4¼ E	4 E	3¾ E	3½ E	3½ E
0	45 W	5½ E	5½ E	5¼ E	5 E	4¾ E	5 E
0	50 W	6¾ E			5¾ E	6 E	6½ E
0	5 E	6 W			12½ W	15¾ W	16½ W
0	10 E	7¾ W			14¼ W	17 W	17½ W
0	40 E	16¾ W	17 W	17¼ W	17 W	16½ W	16¾ W
0	45 E	17¾ W	17¼ W	16¾ W	16¼ W	15¾ W	14½ W
0	50 E	17½ W	16¾ W	16 W	15 W	14 W	11¾ W
0	55 E	16½ W	15¼ W	14 W	13 W	11½ W	8¾ W
0	60 E	15¼ W	13¾ W	12½ W	11 W	9 W	6 W
0	65 E	13½ W	11¾ W	10 W	8¼ W	6½ W	4½ W
0	70 E	11½ W	9¾ W	7¾ W	6 W	4 W	3¼ W
0	75 E	9¾ W	7¾ W	5¾ W	4 W	1¾ W	1 W
0	80 E	7¾ W	6 W	4¼ W	3 W	0¼ W	0¼ E
0	85 E	5½ W	4 W	2½ W	1½ W	0¼ E	1¼ E

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
0	90 E	4¼ W	3½ W	1½ W	0½ W	1¼ W	1 E
0	95 E	3¼ W	2¼ W			2 W	0½ W
0	100 E	2½ W	1 W			2½ W	1 W
5 N	0	4¾ W			10½ W	15 W	15¼ W
5 N	5 W	3¼ W			9 W	13 W	13 W
5 N	10 W	1¾ W			7½ W	10¾ W	11¼ W
5 N	15 W	0¾ W	2¼ W	3¾ W	5½ W	8½ W	9¼ W
5 N	20 W	0	1½ W	2½ W	3½ W	6 W	7¼ W
5 N	25 W	1 E	0	1 W	2 W	3¾ W	4½ W
5 N	30 W	1¾ E	1¼ E	0½ E	0¼ W	1½ W	1½ W
5 N	35 W	2½ E	2¼ E	1¾ E	1½ E	0½ E	0½ E
5 N	40 W	3½ E	3¼ E	3 E	2½ E	2¼ E	2¼ E
5 N	45 W	4½ E	4¼ E	4¼ E	4 E	3¾ E	4 E
5 N	50 W	5½ E	5½ E	5¼ E	5¼ E	5 E	5¼ E
5 N	55 W	6¾ E				6¼ E	6½ E
5 N	5 E	6¼ W			12¾ W	16¼ W	16½ W
5 N	10 E	7¾ W			14¼ W	17½ W	17½ W
5 N	45 E	16¾ W	16 W	15¼ W	14¾ W	14 W	13¾ W
5 N	50 E	16¾ W	15¾ W	14¾ W	13½ W	12¼ W	11 W
5 N	55 E	15½ W	14¼ W	13 W	12 W	10 W	8¼ W
5 N	60 E	14¼ W	12¾ W	11¼ W	10 W	8¼ W	6 W
5 N	65 E	12¾ W	11 W	9½ W	8 W	6 W	4½ W
5 N	70 E	10¾ W	9 W	7¼ W	5½ W	3¾ W	2¾ W
5 N	75 E	8¾ W	7 W	5¼ W	3¾ W	1¾ W	0¾ W
5 N	80 E	6½ W	5 W	3½ W	2½ W	0¼ W	0¼ E
5 N	85 E	4¾ W	3¾ W	2¾ W	1½ W	0¼ W	1¼ E
5 N	90 E	3¾ W				1¼ W	0½ E
5 N	95 E	2¾ W				2¼ W	0½ W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
10 N	15 W	1¼ W		4½ W	6 W	9¼ W	10 W
10 N	20 W	0½ W	2 W	3¼ W	4½ W	7 W	8 W
10 N	25 W	0¼ E	0¾ W	1¾ W	2¼ W	4½ W	5½ W
10 N	30 W	1 E	0½ E	0	1 W	2¼ W	3 W
10 N	35 W	1¾ E	1¼ E	0¾ E	0¼ E	0½ W	1 W
10 N	40 W	2½ E	2¼ E	2 E	1¾ E	1¼ E	1 E
10 N	45 W	3½ E	3½ E	3¼ E	3 E	2¾ E	2½ E
10 N	50 W	4½ E	4½ E	4¼ E	4¼ E	4 E	4 E
10 N	55 W	5½ E	5½ E	5½ E	5¼ E	5¼ E	5½ E
10 N	60 W	6½ E				6½ E	6¾ E
10 N	50 E	16 W	15 W	14 W	12¾ W	11¼ W	10½ W
10 N	55 E	15 W	13½ W	12 W	11 W	9¼ W	8 W
10 N	60 E	13½ W	12 W	10½ W	9¼ W	7¾ W	6 W
10 N	65 E	12 W	10¾ W	9 W	7½ W	6 W	4½ W
10 N	70 E	10 W	8¾ W	6½ W	5 W	3¾ W	3 W
10 N	75 E	8 W	6½ W	5 W	3½ W	1¾ W	1 E
10 N	80 E	5¾ W	4½ W	3¼ W	2 W	0½ W	0¼ E
10 N	85 E	4½ W	3½ W	2¼ W	1¼ W	0	1 E
10 N	90 E	3½ W				1½ W	0½ E
10 N	95 E	2½ W				2¼ W	0½ W
15 N	20 W	1 W	2½ W	4 W	5½ W	7 W	9 W
15 N	25 W	0½ W	1½ W	2½ W	3½ W	4¾ W	6½ W
15 N	30 W	0¼ E	0¼ W	1 W	1¾ W	2¾ W	4½ W
15 N	35 W	1 E	0½ E	0	0½ W	1¼ W	3½ W
15 N	40 W	1½ E	1¼ E	1 E	0½ E	0	0½ W
15 N	45 W	2¼ E	2¼ E	2 E	1¾ E	1½ E	1 E
15 N	50 W	3¼ E	3¼ E	3¼ E	3 E	2¾ E	2½ E
15 N	55 W	4 E	4 E	4 E	4 E	4 E	3¾ E

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
15 N	60 W	5 E	5 E	5 E	5 E	5 E	5 E
15 N	65 W	6 E			5 E	6 E	6 E
15 N	70 W	7 E			5½ E	6¾ E	7 E
15 N	75 W	7¾ E				7 E	7¾ E
15 N	80 W	8¼ E				7 E	8 E
15 N	50 E	15½ W	14¼ W	13 W	11¾ W	10½ W	9¾ W
15 N	55 E	14¼ W	12¾ W	11½ W	10¾ W	8¾ W	7¾ W
15 N	60 E	13 W	11¾ W	10¼ W	9 W	7½ W	6 W
15 N	65 E	11½ W	10 W	8¾ W	7½ W	6 W	4½ W
15 N	70 E	9¾ W	8¼ W	6¾ W	5½ W	4 W	2¾ W
15 N	75 E	8 W	6½ W	5 W	3½ W	2¼ W	0¾ W
15 N	80 E	5¾ W	4½ W	3½ W	2½ W	1¼ W	0
15 N	85 E	4¼ W	3¼ W	2¼ W	1 W	0¼ W	0¾ E
15 N	90 E	3¼ W	2½ W	1¼ W		0¾ W	0½ E
15 N	95 E	2½ W	1½ W			2¼ W	0½ W
20 N	20 W	1½ W	3 W	4¼ W	5¼ W	7 W	10 W
20 N	25 W	1 W	2 W	2¾ W	3½ W	4¾ W	8 W
20 N	30 W	0½ W	1 W	1½ W	2¼ W	3¼ W	5¾ W
20 N	35 W	0¼ E	0¼ W	0¾ W	1½ W	2¼ W	4 W
20 N	40 W	0¾ E	¼ E	0	0½ W	1 W	2½ W
20 N	45 W	1½ E	1¼ E	1 E	¾ E	0¼ E	0¾ W
20 N	50 W	2 E	2 E	1¾ E	1½ E	1¼ E	0¾ E
20 N	55 W	2¾ E	2¾ E	2¾ E	2½ E	2½ E	2 E
20 N	60 W	3¾ E	3¾ E	3¾ E	3½ E	3½ E	3¼ E
20 N	65 W	4¾ E				4¼ E	4 E
20 N	70 W	5½ E				5 E	5 E
20 N	75 W	6¼ E				5¼ E	5¼ E
20 N	80 W	7 E				5¼ E	6 E

Latitude.	Longitude, From London.	VARIATION. Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
20 N	60 E	12¾ W	11¼ W	10 W	9 W	7½ W	6 W
20 N	65 E	11½ W	10 W	8½ W	7¼ W	6 W	4½ W
20 N	70 E	9¾ W	8½ W	7 W	5¾ W	4½ W	2¾ W
20 N	90 E	3½ W	2½ W	1½ W	1 W	0½ W	1 E
25 N	20 W	2 W	3¼ W	4 W	5¼ W	7 W	11 W
25 N	25 W	1¾ W	2¼ W	2¾ W	4 W	5¼ W	9½ W
25 N	30 W	1¼ W	1¾ W	2¼ W	3 W	4 W	7½ W
25 N	35 W	1 W	1½ W	2 W	2½ W	3 W	5½ W
25 N	40 W	0½ W	0¾ W	1 W	1½ W	2¼ W	3¾ W
25 N	45 W	0¼ E	0	0½ W	1 W	1½ W	2½ W
25 N	50 W	0¾ E	0½ E	0¼ E	0	0½ W	1 W
25 N	55 W	1¼ E	1 E	1 E	¾ E	0½ E	0
25 N	60 W	2 E	2 E	2 E	1½ E	1½ E	1¼ E
25 N	65 W	2¾ E				2¼ E	2¼ E
25 N	70 W	3½ E				3¼ E	2¾ E
25 N	75 W	4¼ E				3½ E	3 E
25 N	80 W	4¾ E				3½ E	3 E
25 N	60 E	12¾ W	11½ W	10¼ W	9 W	7½ W	6 W
25 N	65 E	11½ W	10¼ W	9 W	7½ W	6 W	4½ W
25 N	70 E	10 W	8¾ W	7½ W	6 W	4½ W	2¾ W
30 N	10 W	3½ W				11½ W	13¾ W
30 N	15 W	3¼ W				10¼ W	12¾ W
30 N	20 W	3 W	4¼ W	5½ W	6¾ W	8½ W	12 W
30 N	25 W	2¾ W	3½ W	4¼ W	5½ W	6¾ W	10¾ W
30 N	30 W	2½ W	3 W	3½ W	4¼ W	5¼ W	9 W
30 N	35 W	2¼ W	2¾ W	3¼ W	3¾ W	4¼ W	7 W
30 N	40 W	1¾ W	2 W	2½ W	3 W	3½ W	5¼ W
30 N	45 W	1¼ W	1½ W	2 W	2¼ W	2¾ W	4 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
30 N	50 W	0¾ W	1 W	1½ W	1¾ W	2¼ W	3 W
30 N	55 W	0¼ W	½ W	1 W	1¼ W	1½ W	2¼ W
30 N	60 W	0¼ E	0	¼ W	0½ W	1 W	1½ W
30 N	65 W	0¾ E	½ E	¼ E	0	¼ W	1 W
30 N	70 W	1½ E	1¼ E	1 E	¾ E	¼ E	½ W
30 N	75 W	2 E	1½ E	1¼ E	1 E	½ E	0
30 N	80 W	2¼ E				¾ E	0
35 N	10 W	4¼ W			9¾ W	12¼ W	14¼ W
35 N	15 W	4 W			9¼ W	11½ W	13¾ W
35 N	20 W	4 W			8¼ W	10¼ W	13 W
35 N	25 W	3¾ W	4¾ W	6 W	7½ W	9 W	12¼ W
35 N	30 W	3¾ W	4½ W	5½ W	6¾ W	8 W	10½ W
35 N	35 W	3¾ W	4¼ W	5¼ W	6 W	7 W	8¾ W
35 N	40 W	3¾ W	4 W	4½ W	5¼ W	6¼ W	7¼ W
35 N	45 W	3½ W	3¾ W	4¼ W	4¾ W	5½ W	6¼ W
35 N	50 W	3½ W	3¾ W	4 W	4¼ W	5 W	5½ W
35 N	55 W	3½ W	3¾ W	4 W	4¼ W	4¾ W	5 W
35 N	60 W	3¼ W	3¾ W	4 W	4¼ W	5 W	5¼ W
35 N	65 W	3 W				5¼ W	6 W
35 N	70 W	2½ W				5¾ W	6¾ W
35 N	75 W	2¼ W				6½ W	7 W
40 N	10 W	5 W			10¾ W	13¼ W	15 W
40 N	15 W	5¼ W			10½ W	12¾ W	14½ W
40 N	20 W	5¼ W			10 W	12¼ W	14¼ W
40 N	25 W	5½ W			9½ W	11¼ W	13½ W
40 N	30 W	5½ W	6¾ W	8 W	9 W	10¼ W	12¾ W
40 N	35 W	5¾ W	6½ W	7¼ W	8¼ W	9½ W	11¼ W
40 N	40 W	5¾ W	6¼ W	7¼ W	8 W	9 W	10 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.
40 N	45 W	6 W			7½ W	8½ W	9½ W
40 N	50 W	6¼ W			7¼ W	8½ W	9½ W
40 N	55 W	6½ W			7¾ W	8¾ W	10 W
40 N	60 W	6¾ W			8 W	9¼ W	11 W
40 N	65 W	7 W			8½ W	10¼ W	12 W
40 N	70 W	7 W			9 W	11½ W	12¾ W
45 N	5 W	6 W			12½ W	15½ W	16½ W
45 N	10 W	6½ W			12¼ W	15 W	16½ W
45 N	15 W	6¾ W			11¾ W	14¾ W	16¼ W
45 N	20 W	7 W			11½ W	14½ W	16 W
45 N	25 W	7½ W			11½ W	14 W	16 W
45 N	30 W	8 W			11¾ W	13¾ W	15¾ W
45 N	35 W	8¾ W			11¾ W	13¼ W	15¼ W
45 N	40 W	9½ W			12 W	13 W	15 W
45 N	45 W	10½ W			12¾ W	13¼ W	15½ W
45 N	50 W	11½ W			13½ W	14 W	16 W
45 N	55 W	12½ W			14 W	15¼ W	17 W
45 N	60 W	13¾ W			14 W	16 W	18½ W
50 N	5 W	7½ W				17 W	19¼ W
50 N	10 W	7¾ W				17¼ W	19½ W
50 N	15 W	8½ W				17½ W	20 W
50 N	20 W	9 W				17½ W	20½ W
50 N	25 W	9¾ W				17¾ W	21 W
5 S	0	4¼ W			10 W	13¼ W	15 W
5 S	5 W	2½ W			8½ W	11¼ W	13 W
5 S	10 W	1 W	3 W	4¾ W	6½ W	9¼	10¾ W
5 S	15 W	0	1½ W	3 W	4½ W	6¾ W	8½ W
5 S	20 W	1¼ E	0¼ E	0¾ W	2¼ W	4 W	6 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
5 S	25 W	2¼ E	1¼ E	0¼ E	0¾ W	2 W	3 W
5 S	30 W	3¼ E	2¼ E	1¾ E	1 E	0¼ E	0
5 S	35 W	4¼ E	4 E	3½ E	3¼ E	2¾ E	2¾ E
5 S	5 E	6 W			12½ W	15 W	16 W
5 S	10 E	7½ W			14¼ W	16½ W	17 W
5 S	40 E	18 W	17¾ W	17¾ W	17½ W	17½ W	17 W
5 S	45 E	18½ W	18¼ W	18 W	17½ W	17 W	16 W
5 S	50 E	18½ W	17¾ W	17 W	16¼ W	15½ W	12¾ W
5 S	55 E	17½ W	16½ W	15½ W	14¾ W	13 W	9¼ W
5 S	60 E	16¼ W	14¾ W	13¼ W	12 W	10 W	6½ W
5 S	65 E	14¾ W	12¾ W	10¾ W	9 W	7 W	4½ W
5 S	70 E	13 W	11 W	9 W	6¾ W	4½ W	3 W
5 S	75 E	11 W	9 W	7 W	5 W	2¼ W	1 W
5 S	80 E	9 W	7 W	5 W	3 W	0¾ W	0
5 S	85 E	7 W	5½ W	3¾ W	2½ W	0½ W	0¾ E
5 S	90 E	5 W	4½ W	2¾ W	2 W	1¼ W	0¾ E
5 S	95 E	3¾ W	3½ W	1½ W	1½ W	2 W	0½ W
5 S	100 E	3 W	2½ W	1½ W	1 W	2¾ W	1½ W
10 S	0	3¾ W			9½ W	12½ W	14¼ W
10 S	5 W	2¼ W	4¼ W	6¼ W	8¼ W	10½ W	12¾ W
10 S	10 W	0¾ W	2¾ W	4¾ W	6½ W	8¼ W	10¼ W
10 S	15 W	½ E	1 W	2½ W	4 W	5¾ W	7¾ W
10 S	20 W	1¾ E	0½ E	0	1½ W	3 W	4¾ W
10 S	25 W	3 E	2½ E	1¾ E	0¾ E	0¾ W	2 W
10 S	30 W	4 E	3½ E	3 E	2½ E	1¾ E	1 E
10 S	35 W	5¼ E	5 E	4¾ E	4½ W	4 E	3½ E
10 S	5 E	5¾ W			12 W	14½ W	15¾ W
10 S	10 E	7½ W			14 W	16 W	16¾ W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
10 S	15 E	9¼ W			15½ W	17¼ W	17¾ W
10 S	40 E	18¾ W	18¾ W	18¾ W	18¾ W	19 W	19¼ W
10 S	45 E	19½ W	19¼ W	19 W	18¾ W	18½ W	18 W
10 S	50 E	19½ W	19 W	18½ W	17¾ W	16¾ W	14¼ W
10 S	55 E	18½ W	17½ W	16½ W	15½ W	14½ W	10½ W
10 S	60 E	17 W	16 W	15 W	14 W	11¼ W	7¼ W
10 S	65 E	15¾ W	13¾ W	11¾ W	10 W	8 W	5 W
10 S	70 E	14½ W	12 W	10 W	8 W	5½ W	3¼ W
10 S	75 E	12½ W	10¼ W	9 W	5¾ W	3½ W	2 W
10 S	80 E	10½ W	8 W	5½ W	4 W	1¾ W	1 W
10 S	85 E	8½ W	6¾ W	5 W	3¾ W	1½ W	0¼ W
10 S	90 E	6¾ W	5½ W	4¼ W	3 W	1¾ W	0¼ W
10 S	95 E	5 W	4½ W	4 W	3¼ W	2½ W	1 W
10 S	100 E	3¾ W	3½ W	3¼ W	3 W	2¾ W	2 W
10 S	105 E	2¾ W	2¾ W	2½ W	2½ W	3¼ W	2¾ W
10 S	110 E	2 W				3¾ W	3¼ W
15 S	0	3½ W	5½ W	7½ W	9½ W	11¾ W	14 W
15 S	5 W	1¾ W	3¾ W	5¾ W	7¾ W	9½ W	12 W
15 S	10 W	¼ W	2 W	3¾ W	5½ W	7½ W	9½ W
15 S	15 W	1¼ E	0¼ W	1¾ W	3¼ W	4¾ W	7 W
15 S	20 W	2½ E	1½ E	0¾ E	0½ W	1¾ W	4 W
15 S	25 W	3¾ E	3 E	2¼ E	1½ E	0½ E	1 W
15 S	30 W	5 E	4½ E	4 E	3½ E	3 E	2 E
15 S	35 W	6½ E	6¼ E	5¾ E	5½ E	5 E	4½ E
15 S	40 W	7¾ E				6¾ E	6½ E
15 S	5 E	5½ W			11½ W	13¾ W	15¼ W
15 S	10 E	7½ W			14 W	15½ W	16½ W
15 S	40 E	19¾ W	19¾ W	20 W	20 W	20 W	20 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
15 S	45 E	20½ W	20½ W	20¼ W	20¼ W	20 W	19½ W
15 S	50 E	20½ W	20 W	19½ W	18¾ W	18 W	16¼ W
15 S	55 E	19½ W	18½ W	17½ W	16½ W	15½ W	12½ W
15 S	60 E	18¼ W	17 W	16 W	14½ W	12½ W	9 W
15 S	65 E	17 W	15½ W	13½ W	12 W	9¾ W	6 W
15 S	70 E	15½ W	12¾ W	10¾ W	9 W	7¼ W	4¼ W
15 S	75 E	14 W	12 W	9¾ W	7½ W	5 W	3¼ W
15 S	80 E	12 W	10 W	8 W	6 W	3½ W	2½ W
15 S	85 E	10 W	8 W	6¼ W	4¾ W	2¾ W	2¼ W
15 S	90 E	8½ W	7¼ W	6 W	4½ W	3 W	2¼ W
15 S	95 E	6½ W	5¾ W	5 W	4¼ W	3¼ W	2¾ W
15 S	100 E	5 W	4¾ W	4½ W	4¼ W	3¾ W	3½ W
15 S	105 E	3½ W	3½ W	3¾ W	3¾ W	4¼ W	3¾ W
15 S	110 E	2½ W				4½ W	
20 S	0	3¼ W	5¼ W	7¼ W	9 W	11 W	13½ W
20 S	5 W	1½ W	3¼ W	5 W	6¾ W	8¾ W	11¼ W
20 S	10 W	0½ E	1¼ W	3 W	4¾ W	6½ W	8¾ W
20 S	15 W	1¾ E	0½ E	0¾ W	2 W	3½ W	5¾ W
20 S	20 W	3 E	2¾ E	1½ E	0½ W	0½ W	3 W
20 S	25 W	4¾ E	4¼ E	3½ E	2¾ E	2 E	0
20 S	30 W	6 E	5½ E	5¼ E	4¾ E	4¼ E	2½ E
20 S	35 W	7¾ E	7½ E	7¼ E	6¾ E	6½ E	5 E
20 S	40 W	9¼ E				8 E	7½ E
20 S	5 E	5½ W			11 W	13¼ W	15 W
20 S	10 E	7½ W			13½ W	15 W	16¼ W
20 S	15 E	9½ W			15½ W	16½ W	17¾ W
20 S	35 E	19 W	19¼ W	19¾ W	20¼ W	20¾ W	22 W
20 S	40 E	20½ W	20¾ W	21¼ W	21½ W	21¾ W	22 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
20 S	45 E	21¼ W	21¼ W	21½ W	21½ W	21¾ W	21¼ W
20 S	50 E	21¼ W	21 W	20¾ W	20¼ W	19¾ W	18¾ W
20 S	55 E	20½ W	20 W	19¼ W	18½ W	17 W	15 W
20 S	60 E	19½ W	18¼ W	17 W	5¾ W	14½ W	11¼ W
20 S	65 E	18¼ W	17 W	15¾ W	14¼ W	12 W	8 W
20 S	70 E	16¾ W	15½ W	13½ W	12 W	10 W	6 W
20 S	75 E	15 W	13 W	10½ W	9 W	7¾ W	4¾ W
20 S	80 E	13½ W	11¾ W	9¾ W	8 W	6 W	4½ W
20 S	85 E	11½ W	10 W	8½ W	7 W	5 W	4¼ W
20 S	90 E	10 W	8¾ W	7½ W	6¼ W	4¾ W	4½ W
20 S	95 E	8 W	7¼ W	6½ W	5¾ W	4¾ W	4½ W
20 S	100 E	6½ W	6¼ W	6 W	5½ W	5 W	4¾ W
20 S	105 E	4¾ W	5 W	5 W	5 W	5 W	4¾ W
25 S	0	3 W	5 W	7 W	8¾ W	10½ W	12½ W
25 S	5 W	1 W	2¾ W	4½ W	6¼ W	8 W	10 W
25 S	10 W	1 E	0½ W	2¼ W	4 W	5½ W	7½ W
25 S	15 W	2½ E	1¼ E	0	1¼ W	2½ W	4½ W
25 S	20 W	4 E	3¼ E	2 E	1¼ E	0½ E	2¾ W
25 S	25 W	6 E	5¼ E	4½ E	3¾ E	3 E	1 E
25 S	30 W	7½ E	7 E	6½ E	6 E	5½ E	3½ E
25 S	35 W	9¼ E				7½ E	6 E
25 S	40 W	11 E				9 E	
25 S	5 E	5¼ W	7 W	8¾ W	10½ W	12½ W	14½ W
25 S	10 E	7½ W				14½ W	16 W
25 S	15 E	9½ W				16¼ W	17¾ W
25 S	35 E	19½ W	20¼ W	20¾ W	21½ W	22¼ W	23½ W
25 S	40 E	21 W	21½ W	22 W	22½ W	23¼ W	23¾ W
25 S	45 E	22¼ W	22½ W	22¾ W	23 W	23¼ W	23 W
25 S	50 E	22½ W	22½ W	22¼ W	22¼ W	22 W	21 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
25 S	55 E	22 W	21½ W	21 W	20½ W	19¾ W	18 W
25 S	60 E	20¾ W	19¾ W	19 W	18¼ W	17 W	14½ W
25 S	65 E	19¼ W	18¼ W	17¼ W	16¼ W	15 W	11¾ W
25 S	70 E	17¾ W	16¾ W	15¾ W	14½ W	13 W	9½ W
25 S	75 E	16¼ W	15 W	13¾ W	12½ W	11¼ W	8 W
25 S	80 E	14¾ W	13½ W	12¼ W	10¾ W	9¼ W	7½ W
25 S	85 E	13 W	11¾ W	10½ W	9¼ W	8 W	7¼ W
25 S	90 E	11¼ W	10¼ W	9¼ W	8¼ W	7¼ W	7 W
25 S	95 E	9½ W	9 W	8½ W	7¾ W	7 W	6½ W
25 S	100 E	7¾ W	7½ W	7¼ W	7 W	6¾ W	6 W
30 S	0	2¾ W	4¼ W	6 W	7¾ W	9½ W	11¾ W
30 S	5 W	0½ W	2 W	3½ W	5¼ W	7 W	9 W
30 S	10 W	1½ E	0	1½ W	3 W	4½ W	6¼ W
30 S	15 W	3¼ E	2¼ E	0¾ E	0½ W	1½ W	3½ W
30 S	20 W	5 E	4¾ E	3¾ E	2¾ E	1½ E	0½ W
30 S	25 W	7¼ E	6½ E	5¾ E	5 E	4 E	2 E
30 S	30 W	9 E				6½ E	4½ E
30 S	35 W	11 E				8½ E	7¼ E
30 S	5 E	5 W	7 W	8¾ W	10¼ W	11¾ W	13¾ W
30 S	10 E	7¼ W	9¼ W	11¼ W	12¾ W	14 W	15½ W
30 S	15 E	9½ W				16 W	18 W
30 S	30 E	17½ W	18½ W	19½ W	20½ W	21¾ W	23¼ W
30 S	35 E	20¼ W	21 W	21¾ W	22½ W	23½ W	24¾ W
30 S	40 E	21¾ W	22½ W	23¼ W	24 W	24¾ W	25¼ W
30 S	45 E	23 W	23½ W	24 W	24½ W	25¼ W	24½ W
30 S	50 E	23½ W	23¾ W	24 W	24¼ W	24½ W	23¼ W
30 S	55 E	23 W	23 W	23 W	22¾ W	22½ W	21 W
30 S	60 E	21¾ W	21½ W	21 W	20½ W	20 W	18 W
30 S	65 E	20¼ W	19½ W	19 W	18½ W	17¾ W	15 W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
30 S	70 E	18¾ W	18 W	17¼ W	16½ W	15½ W	13 W
30 S	75 E	17¼ W	16½ W	15¾ W	14¾ W	13¾ W	11½ W
30 S	80 E	15¾ W	15 W	14 W	13 W	12 W	10¾ W
30 S	85 E	14 W	13¼ W	12½ W	11½ W	10½ W	10¼ W
30 S	90 E	12½ W	11¾ W	11 W	10¼ W	9½ W	9½ W
30 S	95 E	10½ W	10 W	9½ W	9¾ W	8¾ W	9 W
30 S	100 E	8¾ W				8¾ W	
35 S	0	2½ W	4 W	5½ W	7 W	8½ W	10½ W
35 S	5 W	0	1 W	2½ W	4 W	5¾ W	7¾ W
35 S	10 W	2¼ E	1½ E	0½ W	1¾ W	3¼ W	5½ W
35 S	15 W	4¼ E				0¼ W	2¼ W
35 S	20 W	6¾ E				2½ E	0½ E
35 S	25 W	8¾ E				5 E	3 E
35 S	30 W	10¾ E				7¼ E	5¾ E
35 S	35 W	12¾ E				9¼ E	8¼ E
35 S	5 E	5 W	6½ W	8 W	9½ W	11 W	13 W
35 S	10 E	7¼ W	8½ W	10¼ W	11¾ W	13½ W	15¼ W
35 S	15 E	9¾ W	11¼ W	12¾ W	14¼ W	15½ W	17½ W
35 S	20 E	12½ W	14 W	15½ W	17 W	18½ W	19¾ W
35 S	25 E	15¼ W	16½ W	18 W	19¼ W	20¾ W	22½ W
35 S	30 E	18¼ W	19½ W	20½ W	21½ W	22¾ W	24¼ W
35 S	35 E	21 W	22 W	22¾ W	23½ W	24½ W	26 W
35 S	40 E	22¾ W	23½ W	24¼ W	25 W	26 W	26¾ W
35 S	45 E	24¼ W	25 W	25 W	26 W	27 W	26½ W
35 S	50 E	24¾ W	25¼ W	25¾ W	26 W	26½ W	24¾ W
35 S	55 E	24¼ W	24½ W	24½ W	24¾ W	25 W	23 W
35 S	60 E	23 W	23 W	23 W	22¾ W	22¾ W	21 W
35 S	65 E	21½ W	21¼ W	21 W	20¾ W	20¼ W	18¾ W
35 S	70 E	19¾ W	19¼ W	18¾ W	18¼ W	17¾ W	16¾ W

Latitude.	Longitude, From London.	VARIATION.					
		Anno 1700.	Anno 1710.	Anno 1720.	Anno 1730.	Anno 1744.	Anno 1756.
Degrees.	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*	*Degrees.*
35 S	75 E	18¼ W	17¾ W	17¼ W	17½ W	16 W	15¼ W
35 S	80 E	16¾ W	16¼ W	15¾ W	15 W	14¼ W	14¼ W
35 S	85 E	15 W	14½ W	14 W	13½ W	13 W	13½ W
35 S	90 E	13½ W	13 W	12¾ W	12½ W	12 W	12¾ W
35 S	95 E	11½ W	11½ W	11¼ W	11 W	10¾ W	
40 S	0	2 W	3½ W	5 W	6½ W	7¾ W	9¼ W
40 S	5 W	0¾ E	0½ W	2 W	3½ W	5 W	6¾ W
40 S	10 W	3¼ E				2½ W	4¼ W
40 S	15 W	5½ E				0½ E	1½ W
40 S	20 W	8 E				3¼ E	1¼ E
40 S	25 W	10½ E				5½ E	4 E
40 S	30 W	12½ E				8 E	6½ E
40 S	5 E	4½ W	6 W	7½ W	9 W	10¼ W	12 W
40 S	10 E	7¼ W	8½ W	10 W	11½ W	12¾ W	14½ W
40 S	15 E	9¾ W	11¼ W	12¾ W	14 W	15½ W	17¼ W
40 S	20 E	12¾ W	14¼ W	15½ W	17 W	18½ W	20 W
40 S	25 E	16 W	17¼ W	18½ W	19¾ W	21¼ W	22¾ W
40 S	30 E	19 W	20 W	21¼ W	22¼ W	23½ W	25¼ W
40 S	35 E	21¾ W	22¾ W	23½ W	24½ W	25½ W	27 W
40 S	40 E	23¾ W	24½ W	25 W	26 W	27 W	28½ W
40 S	45 E	25¼ W	26 W	26¾ W	27½ W	28¼ W	27¼ W
40 S	50 E	26 W	26½ W	27 W	27½ W	28¼ W	26 W
40 S	55 E	25¼ W	25½ W	25¾ W	26 W	26½ W	24½ W
40 S	60 E	24 W	24 W	24 W	24¼ W	24¼ W	22¾ W
40 S	65 E	22½ W	22½ W	22¼ W	22¼ W	22 W	20¾ W
40 S	70 E	20¾ W	20½ W	20¼ W	20 W	19½ W	19½ W
40 S	75 E	19¼ W	18¾ W	18¼ W	17¾ W	17¼ W	18¼ W
40 S	80 E	17½ W	17 W	16½ W	16 W	15½ W	17¼ W

VARIATION *of the* Magnetic-Needle, *from the Iſlands of* Orkney *to* Hudſon's Straits, *for the Year* 1757.

Weſt Longitude From *London.*		Degrees of North Latitude.							
		56	57	58	59	60	61	62	63
Degrees.									
4	Degrees of Weſt Variation.				18	18	19	19	
10				19	19	20	20	21	
27				24	24	25	25		
45		29	29	30	31				
55									
65						39	40	41	

VARIATION *in* Hudſon's-Bay *and* Straits, *for the Year* 1757.

Weſt Longitude From *London.*		Degrees of North Latitude.									
		52	55	56	57	58	59	60	61	62	63
Degrees.											
65	Degrees of Weſt Variation.							39	40	41	
71									41	41	
79											43
81									38	39	40
83		18	20							39	40
86									35	37	
92					17	17					
94						17	18				
95							18				

We have been informed, that in Hudſon's-Bay, there has been very little alteration in the variation of the compaſs during the twenty years laſt paſt.

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